

**REMARKS**

In light of the above amendments and following remarks, reconsideration and allowance of this application are respectfully requested.

At paragraph 1 of the outstanding office action the Examiner has requested new drawings that correct the handwritten elements. Applicant submits herewith a set of substitute drawings removing such handwritten elements. Applicant submits that these substitute drawings introduce no new matter.

At paragraph 2 of the outstanding office action the Examiner has objected to claim 5 as improperly depending from claim 4. As suggested by the Examiner, Applicant has amended claim 5 to depend from claim 4, and therefore requests that the objection to claim 5 on this ground be withdrawn.

At paragraphs 4-10 the Examiner has rejected claims 4, 5, 8-10, 14, 15 and 18-20 under 35 USC 112. Applicant has amended claims 8, 9 and 18-20 and has the following comments. Regarding claim 8, Applicant has amended the claim to provide proper antecedent basis for “an eye crossing level” and “a crossing distribution’s peak to peak variation.” Regarding claims 9 and 10, Applicant has amended claim 9 to depend from claim 7, therefore providing proper antecedent basis for “said obtained data dependent jitter,” and to clarify what is meant by “ISI.” Regarding claim 18, Applicant has amended the claim to provide proper antecedent basis for “an eye crossing level” and “a crossing distribution’s peak to peak variation.” Regarding claims 19 and 20, Applicant has amended claim 19 to depend from claim 17, therefore providing proper antecedent basis for “said obtained data dependent jitter,” and to clarify what is meant by “ISI.” Regarding claims 4, 5, 14 and 15, Applicant directs the Examiner to page 5, lines 6-24, and more

particularly lines 16-20 where the “P bit values” is described, and indeed describe that P is the number of following bit intervals.

In light of the amendments to the claims and explanatory material noted above, Applicant requests that the rejection of claims 4, 5, 8-10, 14, 15 and 18-20 under 35 USC 112 be withdrawn.

At paragraph 11, the Examiner has rejected claims 1-20 under 35 USC 101 because the claims are directed to non-statutory subject matter. Applicant respectfully traverses the rejection.

Applicant has removed reference from the claims to a “substantially noise-free waveform.” Applicant has also amended claim 1 to recite “storing the average pattern for each category to a computer readable medium.” All claims are directed to a method and apparatus for displaying waveforms. Without doubt, the process of displaying waveforms and the apparatus by which waveforms are displayed, is the very subject matter contemplated by 35 U.S.C. §101. Should the Examiner disagree, she is respectfully requested to explain otherwise. Applicant therefore requests that the rejection of claims 1 and 11, as well as claims 2-10 and 12-20 which depend therefrom, under 35 USC 101 be withdrawn.

At paragraph 13 of the outstanding office action the Examiner has rejected claims 1-3, 6, 11-13 and 16 under 35 USC 103(a) as being unpatentable over Suwada et al. (US Patent Application 2002/0032555, now US Patent No. 6,925,430) in view of Richardson (US Patent No 5,966,684). Applicant respectfully traverses the rejection.

As a preliminary matter, Applicant would like to point out that Suwada et al. is concerned with generating a waveform, rather than receiving and analyzing a waveform. When a waveform is generated, all parameters of the waveform are known, making much analysis trivial and indeed

useless as all parameters are already known. The present invention is concerned with acquiring and analyzing a received unknown waveform.

The portions of Suwada et al. relied upon by the Examiner describe a system for determining the bit value of a waveform through amplitude slicing and detection. Thus, as is described at paragraphs 6 and 7 of the published Suwada application, the waveform is sliced to determine whether bit values are a 1 or a 0, or in other words, the waveform is sliced at a horizontal slice along the amplitude axis. In contrast, in accordance with the claimed invention as set forth in independent claims 1 and 11, waveform slices are taken vertically, along the time axis, thus dividing the waveform into a number of time intervals rather than amplitude values.

Furthermore, there is no discussion of Suwada et al. of characterizing each of a plurality of waveform slices in accordance with the values of N bits of the waveform for a preceding number of periods. Indeed, the portions of Suwada et al. relied upon by the Examiner focus on confirming that the generated waveform meets a particular desired set of characteristics. There is no suggestion in the Suwada et al. reference to determine waveform categories based upon preceding values (e.g. N bits) of portions of the waveform. The generation of an eye diagram, while indeed overlaying bit intervals, does not inherently describe categorization before overlay as claimed in the present application.

Additionally, consider the following example in accordance with the claimed invention: consider four slice intervals prior to a present interval under consideration, a waveform in which the prior pattern was 1010 would be categorized differently from a waveform in which the prior pattern was 1011. This is important because the prior patterns have an effect on the shape of the present waveform. Thus, by categorizing the waveforms with other waveforms having like prior patterns, the invention effectively removes the effects of the difference in the prior patterns,

compensates for differences in these effects, and also learns the effects these different patterns have on different types of present waveforms. By averaging waveforms that have the same prior pattern, random noise can be removed from these groups, leaving the effects generated from each prior pattern. Suwada et al. teaches no such method and apparatus.

The Examiner further relies in Richardson to teach averaging waveform slices in each category resulting in an average pattern for each category. Applicant submits that because Suwada et al. fails to disclose the claimed categories, the addition of Richardson to discuss averaging of categories would be improper. Furthermore, Richardson describes a system that averages periodic noise. However, in the claimed invention, there is no periodic noise to average. Rather the waveforms in a particular category are averaged to remove random noise not attributable to the effects of the preceding pattern of waveform values. Indeed, the application of Richardson might result in averaging away significant portions of the acquired signal.

Because Suwada et al. fails to teach the present invention as claimed in independent claims 1 and 11, as well as claims 2-3, 6, 12-13 and 16 which depend therefrom, and because the addition of Richardson fails to cure these defects, Applicant requests that the rejection of claims 1-3, 6, 11-13 and 16 under 35 USC 103(a) be withdrawn.

While the Examiner has not particularly rejected claims 4, 5, 7-10, 14, 15 and 18-20 over any prior art, Applicant submits that it would be improper to reject these claims under 35 USC 103(a) based upon the combination of Suwada et al. and Richardson as each of these claims depends from one or the other of independent claims 1 and 11. Furthermore, Applicant notes that the features contained in these claims, including at least the further categorization based upon waveform values in a following number of periods, are also not shown in the combination of

references relied upon by the Examiner. Thus, these claims are allowable as further presenting independently patentable combination in their own right.

CONCLUSION

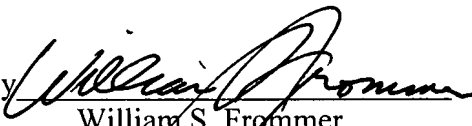
Applicant has made a diligent effort to place claims 1-20 in condition for allowance, and notice to this effect is earnestly solicited. If the Examiner is unable to issue a Notice of Allowance regarding these claims, the Examiner is requested to contact the undersigned attorney to discuss any further outstanding issues.

It is to be appreciated that the foregoing comments concerning the disclosures in the cited prior art represent the present opinions of the applicant's undersigned attorney and, in the event, that the Examiner disagrees with any such opinions, it is requested that the Examiner indicate where in the reference or references, there is a basis for a contrary view.

Please charge any fees incurred by reason of this response and not paid herewith to Deposit Account No. 50-0320.

Respectfully submitted,

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